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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/633,372	08/01/2003	Anguel Nikolov	02-40171-US	5119

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EXAMINER

CURTIS, CRAIG

ART UNIT	PAPER NUMBER
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2872

DATE MAILED: 04/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/633,372	Applicant(s) NIKOLOV ET AL.	
	Examiner Craig Curtis	Art Unit 2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 01 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

1. **Claims 1-30 are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure that is not enabling.** In independent claim 1, Applicants have not identified the element or elements responsible for making the disclosed device birefringent, which is critical or essential to the practice of the invention, but is not included in the claim(s) and is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 1-23 & 26-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Date et al. (6,618,104) in view of Owen et al. (6,692,797) and Simpson et al. (6,661,952).**

With regard to claim 1, Date et al. disclose the invention as claimed—[a] device of substantially uniform thickness less than about 10 microns (see col. 17, ll. 8-10, broadly interpreting Applicants' "...less than about 10 microns..." recitation), suited to propagate an

incident radiation and being suitable for operating in a wavelength range about a central wavelength (inherent), said device comprising: a base substrate (61 & 63 in Fig. 6A); a layer of periodic index regions of alternating refractive indices (viz., liquid crystal layer 60) applied to a first surface of said base substrate (see Fig. 6A; and, a cap substrate (viz., 62 & 64) located substantially adjacent to said layer distal to said base substrate (see Fig. 6A), wherein said device is suitable to produce an arbitrary phase retardation between 0 and 2π (taking the phase retardation to be zero, it being noted, incidentally, that there is no need for Applicants' subsequent recitation of the word "phase")—**EXCEPT FOR** explicit teachings wherein (1) said device is birefringent and (2) said layer has a periodicity of less than the central wavelength (although this second teaching arguably is implicitly taught by Date et al. in order for layer 60 to function as a diffraction grating; see col. 17, ll. 11-18).

With regard to the birefringent nature of the device, Owen et al. provide a teaching wherein birefringent alignment layers are used in a liquid crystal device. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the invention of Date et al. such that it make use of birefringent alignment layers, as explicitly taught by Owen et al., for at least the reason of matching refractive indices at common surfaces between said liquid crystal layer and said alignment layers. And with regard to the periodicity of said layer, Simpson et al. disclose a layer of periodic index regions of alternating refractive indices that has a periodicity that is less than the central wavelength (viz., either (SWS) sub-wavelength grating structure 105 or 106), and it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified, to the extent that explicit disclosure is lacking, the device of Date et al. such that its layer of periodic index

regions of alternating refractive indices have a periodicity less than said central wavelength, as taught by Simpson et al., for at least the purpose of ensuring that said layer adequately function as a diffracting structure.

With regard to claims 2 and 5, the combination discloses, as noted above, optically active (read birefringent) alignment layer substrates.

With regard to claims 3 and 6, the combination discloses a base substrate that comprises a metallic mirror. See 64 in Fig. 6A in Date et al.; also see col. 17, ll. 34-39 in same.

With regard to claims 4 and 7, light guide 63 in Date et al. is glass, a dielectric material.

With regard to claim 8, please see rails 107 in the Simpson et al. reference of the combination.

With regard to claims 9-23, please compare Figs. 6A and 6B in the Date et al. reference of the combination.

With regard to claims 26, 27, 29, and 30, please see Fig. 6A in Date et al. reference of the combination.

With regard to claim 28, please see Fig. 1 in the Simpson et al. reference of the combination.

3. Claims 24 & 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Date et al. (6,618,104) in view of Owen et al. (6,692,797) and Simpson et al. (6,661,952), as set forth above, and further in view of Brinkman et al. (5,852,688).

The combination discloses the claimed invention as set forth above—EXCEPT FOR additional explicit teachings wherein said device further comprises at least one anti-reflection

Art Unit: 2872

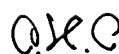
coating on said base substrate distal to said layer of periodic index regions and at least one anti-reflection coating on said cap substrate distal to said layer of periodic regions.

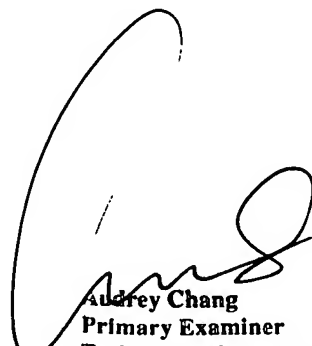
Brinkman et al., however, explicitly teach anti-reflection coating an output surface of a birefringent device (see, e.g., col. 9, ll. 65—col. 10, ll. 1-5). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the device of the combination such that one or more of its substrates be anti-reflection coated, as explicitly taught by Brinkman et al., for at least the purpose of ensuring that light not needlessly be kept from entering and or exiting said device as desired.

Contact Information

4. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Craig Curtis, whose telephone number is (571) 272-2311. The centralized facsimile phone number for the USPTO is (703) 872-9306.

Any inquiry of a general nature regarding the status of this application should be directed to the Group receptionist, whose telephone number is (703) 308-0956.


Craig H. Curtis
Group Art Unit 2872
13 April 2004


Audrey Chang
Primary Examiner
Technology Center 2800